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香港中文大學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

CSE - ITCSC Joint Colloquium

Circuit Complexity meets the Theory of Randomness

By
Prof. Eric Allender
Computer Science Department, Rutgers University

8 November 2011, Tuesday
4:30 pm – 5:30 pm
Rm. 121, 1/F., Ho Sin Hang Engineering Building, CUHK

Abstract:
In the past decade, there has been remarkable progress in a field known as "derandomization" -- leading to a situation where most experts now believe that any probabilistic algorithm can be replaced by a deterministic algorithm with comparable complexity. The tools and techniques of derandomization have also opened new connections between two fields that had previously seemed to have little connection to each other:
1. the field of circuit complexity (in which we try to find the most efficient circuitry to compute a given Boolean function), and
2. the field of algorithmic information theory (aka "Kolmogorov Complexity"), which provides a mathematical definition of "randomness".

This lecture will introduce the listener to these two fields, and show how the study of derandomization has opened links that have enriched each field.

Biography:
Eric Allender is a well-known researcher in the field of computational complexity, and has given numerous plenary addresses internationally at symposia on theoretical computer science. He received a B.A. from the University of Iowa in 1979, majoring in Computer Science and Theatre, and a Ph.D. from Georgia Tech in 1985. He has been at Rutgers University since then, serving as department chair from 2006 to 2009. He is a Fellow of the ACM, and serves on the editorial boards of ACM Transactions on Computation Theory, Computational Complexity, and The Chicago Journal of Theoretical Computer Science. He has chaired the Conference Committee for the annual IEEE Conference on Computational Complexity, and he serves on the Scientific Board for the Electronic Colloquium on Computational Complexity (ECCC). is a well-known researcher in the field of computational complexity, and has given numerous plenary addresses internationally at symposia on theoretical computer science. He received a B.A. from the University of Iowa in 1979, majoring in Computer Science and Theatre, and a Ph.D. from Georgia Tech in 1985. He has been at Rutgers University since then, serving as department chair from 2006 to 2009. He is a Fellow of the ACM, and serves on the editorial boards of ACM Transactions on Computation Theory, Computational Complexity, and The Chicago Journal of Theoretical Computer Science. He has chaired the Conference Committee for the annual IEEE Conference on Computational Complexity, and he serves on the Scientific Board for the Electronic Colloquium on Computational Complexity (ECCC).

***** ALL ARE WELCOME *****

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